DOCUMENT RESUME

ED 350 046 JC 920 499

AUTHOR Burke, Marilyn; And Others
TITLE Computer-Assisted Vs. Text-Based Practice: Which Method Is More Effective?
PUB DATE 15 Mar 92
NOTE 12p.; A version of this paper was presented at the Annual Midwest Reading and Study Skills Conference (5th, Kansas City, MO, March 15, 1992).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; *Achievement Gains; Community Colleges; Comparative Analysis; *Computer Assisted Instruction; Learning Laboratories; Pretests Posttests; Reading Centers; Reading Skills; *Remedial Reading; *Teaching Methods; Textbook Research; *Textbooks; *Time on Task; Two Year Colleges; Two Year College Students
IDENTIFIERS *Austin Community College TX

ABSTRACT

Following the introduction of a one-credit practice lab, and computer-assisted practice into a developmental reading course at the Riverside Campus of Austin Community College (Texas), students made gains on course exit test scores. In an effort to determine whether the test-score gains were due to increased practice time or due to the use of computer software, a study was conducted of three cohorts of students in developmental reading skills courses at the college. Twenty-five students were enrolled in two fall 1991 classes using computer-assisted practice labs; 26 students were enrolled in two fall 1991 classes using text-based practice labs; and 52 students were enrolled in four spring 1989 classes utilizing both computer- and text-based instruction methods, but no practice lab. An analysis of student performance on the Nelson Denny Reading Test showed no significant differences between the computer-assisted practice group and the text-based practice group on post-test scores. However, the two practice lab groups (the 1991 cohorts) had significantly higher scores than the 1989 cohort which did not participate in the practice lab. Data graphs and tables are included. (PAA)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED350046

COMPUTER-ASSISTED VS. TEXT-BASED PRACTICE: WHICH METHOD IS MORE EFFECTIVE?

Marilyn Burke, Cynthia Peterson, Dolores Segura, Larry Johnson
Austin Community College Riverside Campus
Austin, Texas

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

M. Burke

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

A version of this paper was presented to the Fifth Annual Midwest Reading and Study Skills Conference, Kansas City, Missouri, March 15, 1992. All correspondence should be directed to Dolores Segura, Reading Department Head , Parallel Studies Division, Austin Community College Riverside, 1020 Grove Blvd., Austin Texas 78741.

JC920499

BEST COPY AVAILABLE

COMPUTER-ASSISTED VS. TEXT-BASED PRACTICE: WHICH METHOD IS MORE EFFECTIVE?

Marilyn Burke, Cynthia Peterson, Dolores Segura, Larry Johnson
Reading Department Parallel Studies Division
Austin Community College Riverside Campus, Austin, Texas

Abstract

This study of developmental reading classes at Austin Community College first compared the effectiveness of practicing reading skills using computer software with practice using text-based materials. Results showed that the computer-assisted practice group and the text-based practice group did not differ significantly in gain scores on the Nelson Denny Reading Test. However, in a second comparison, a significant difference was found in reading gains for additional practice time.

Background

Computer-Assisted Instruction programs are now almost as common as textbooks. We questioned whether computer-assisted practice is as effective as text-based practice in improving reading skills in developmental community college students.

After incorporating an additional one credit practice lab and computer-assisted practice into our community college developmental reading classes, students seemed to be making greater gains on the exit test (the Nelson Denny Reading Test). That observation prompted this study. We did not know whether our students were indeed making greater gains and if so, whether the gains were due to additional practice time or to computer-assisted practice. If computer-assisted practice is simply more effective with developmental community college students, then more of our materials budget should be dedicated to software programs. We questioned whether our assumptions about computer-assisted and text-based practice would prove to be true when tested in a controlled instructional situation.

Method

Design

Quasi-experimental and observational. Anecdotal records were developed.

Subjects

Students enrolled in developmental reading skills classes at Austin Community College, Riverside Campus, Austin, Texas.

Dependent variable

Reading ability as measured by the Nelson Denny Reading Test, Forms E and F.

Independent variables:

Three different instructional conditions:

(1) *computer-assisted practice lab:* two four unit Reading Skills I and II classes, Fall, 1991, 25 students.

(2) *text-based practice lab:* two four unit Reading Skills I and II classes, Fall, 1991, 26 students.

(3) *mixed instruction, no practice lab:* all Reading Skills I and II. classes, Spring, 1989, 52 students. This was the last semester of classes taught before implementation of the practice lab.

Procedures:

In the Fall semester, 1991, two experienced instructors each taught two classes using direct group instruction, one class with a computer-assisted practice lab and one with a text-based practice lab. Both software and text practice materials were correlated to the concepts presented in the classroom. Peer-to-peer communication characterized the activities of both practice labs, through E-mail in the computer-based practice lab and small groups in the text-based practice lab. At the end of the semester, gain scores on the Nelson Denny Reading Test for the two groups were compared.

Gain scores on the Nelson Denny Reading Test for the practice lab classes were then compared to the traditional classes without practice labs. The Reading Skills I and II classes taught in Spring, 1989 were selected for the comparison because they were the last classes to be taught without computer-assisted practice and without the additional weekly one hour practice lab.

Controls:

(1) For the *text -based and computer -based comparison*, instructor effects were minimized.

- Only two instructors taught the lab courses. Neither instructor preferred one method to the other.
- The classes were counterbalanced: Marilyn Burke taught Reading Skills II classes, one computer lab and one text lab. Dolores Segura taught Reading Skills I classes, one text lab and one computer lab.
- A common syllabus was followed for each course.

(2) For the *practice lab/non-lab comparison,* we did not have the data to control fully for instructor effects. The two instructors who taught the text-based and computer-based classes taught 30 per cent of the students in the non-lab classes in Spring, 1989. This was not enough to make a valid comparison with their Fall, 1991 classes. However, the other non-lab classes were taught by experienced reading skills instructors who followed the same texts and detailed course syllabus.

(3) Students did not know of the differences in classes at the time they registered for Reading Skills, nor were they told of the study or of the difference in methods of instruction during the semester.

(4) The three groups of students were nearly equivalent on several measures. They were nearly equivalent in age, ethnicity and gender. A one factor ANOVA was computed on the Nelson Denny pretests for the three groups, $p = .98$.

Results

(1) *The performance of the computer-assisted practice group and the text-based practice group was not significantly different, $p = .336$.*

(2) *The performance of the two practice lab groups was significantly higher than the performance of the group from 1989 that did not have the practice lab, $p = .005$.* Although we could not perform statistical comparisons for the two instructors, we did note that the means for their classes were higher for the practice lab classes than they were for the non-lab classes.

Discussion

Although each of our instructional modes resulted in a significant improvement in the Nelson Denny Reading Test scores, the practice lab classes made the greatest difference whether computer-based or text-based in approach. We suspect that our students need the interactive, guided practice of a lab, which they do not get with homework assignments.

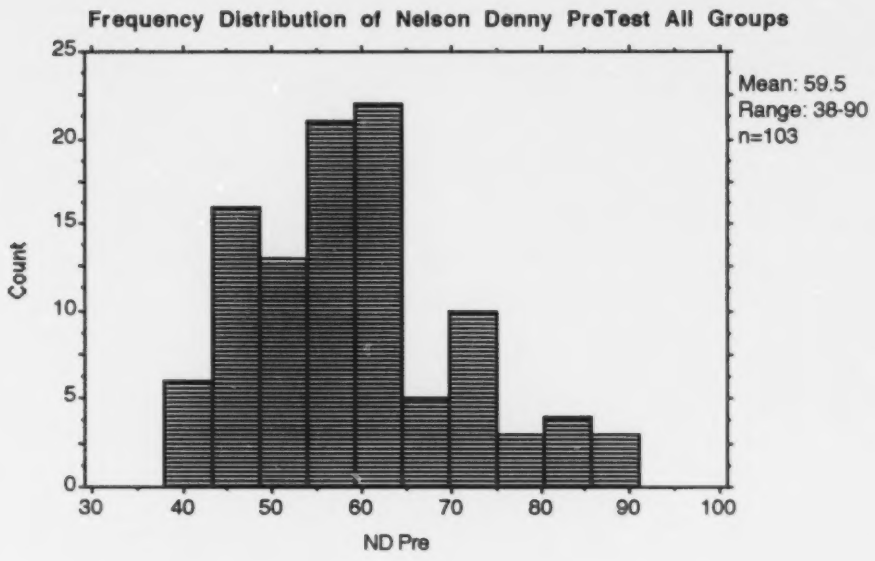
These findings support other research which shows that the amount of time a student spends on task is predictive of the amount learned. That seems to be common sense. The quality of time spent on instructional tasks may be key. As we know,

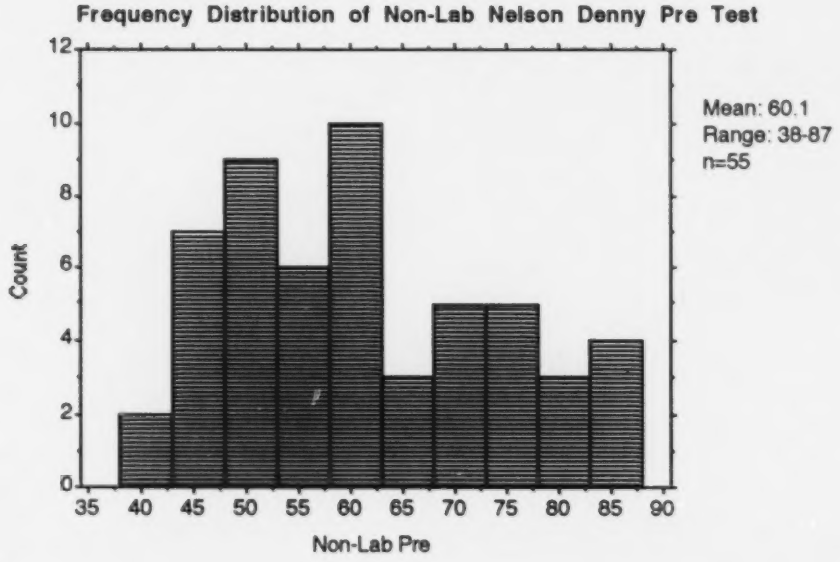
developmental students often come from school experiences where they have spent time, but not time actively engaged in the learning process.

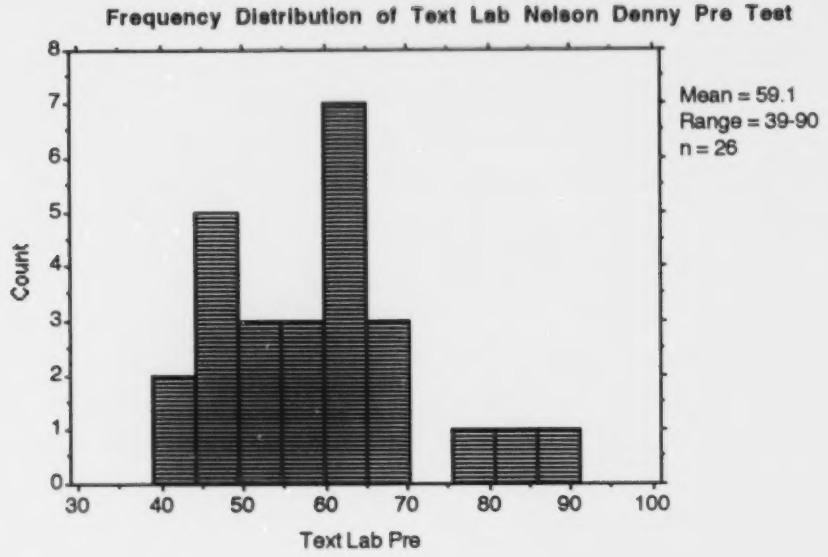
Many of our students are back in school for the first time in years. In the course of a semester they become more school-savvy and may better attend to the exit test than they did to the entry test. For that reason, we suspect that student maturation might also be a factor in improved reading test scores.

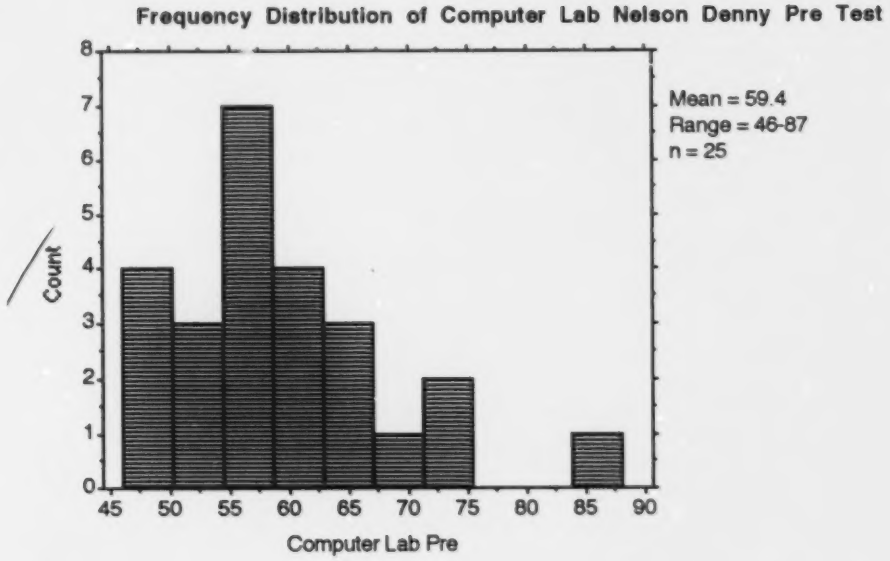
We are continuing to study the differences in performance among our classes. Currently, all of our classes are taught using correlated computer-assisted and text-based practice in a collaborative setting. As we continue to monitor gain scores in our three and four unit classes, we hope to determine more conclusively how method and practice time effect reading improvement in developmental community college students.

Nelson Denny Pre-Test Comparisons






Frequency Distribution of Text Lab Nelson Denny Pre Test
Mean = 59.1
Range = 39-90
n = 26
Count
Text Lab Pre
0
1
2
3
4
5
6
7
8
30
40
50
60
70
80
90
100


Frequency Distribution of Computer Lab Nelson Denny Pre Test
Mean = 59.4
Range = 46-87
n = 25
Count
Computer Lab Pre
0
1
2
3
4
5
6
7
8
45
50
55
60
65
70
75
80
85
90

Text Practice / Computer Practice Comparison

One Factor ANOVA X_1: Method Y_1: Gain Score

Analysis of Variance Table

Source:	DF:	Sum Squares:	Mean Square:	F-test:
Between groups	1	146.8	146.8	.946
Within groups	49	7603.945	155.183	p = .3355
Total	50	7750.745		

Model II estimate of between component variance = -.329

One Factor ANOVA X_1: Method Y_1: Gain Score

Group:	Count:	Mean:	Std. Dev.:	Std. Error:
Text	26	22.154	11.949	2.343
Computer	25	18.76	12.966	2.593

Practice Lab / Non-Lab Comparison

One Factor ANOVA X_1: Method Y_1: Gain Score

Analysis of Variance Table

Source:	DF:	Sum Squares:	Mean Square:	F-test:
Between groups	1	1542.553	1542.553	8.325
Within groups	101	18714.495	185.292	p = .0048
Total	102	20257.049		

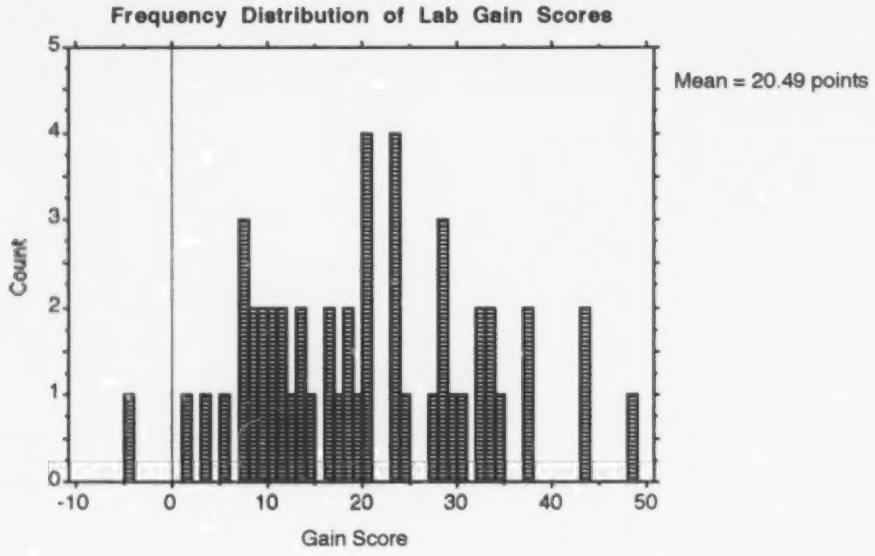
Model II estimate of between component variance = 26.357

One Factor ANOVA X_1: Method Y_1: Gain Score

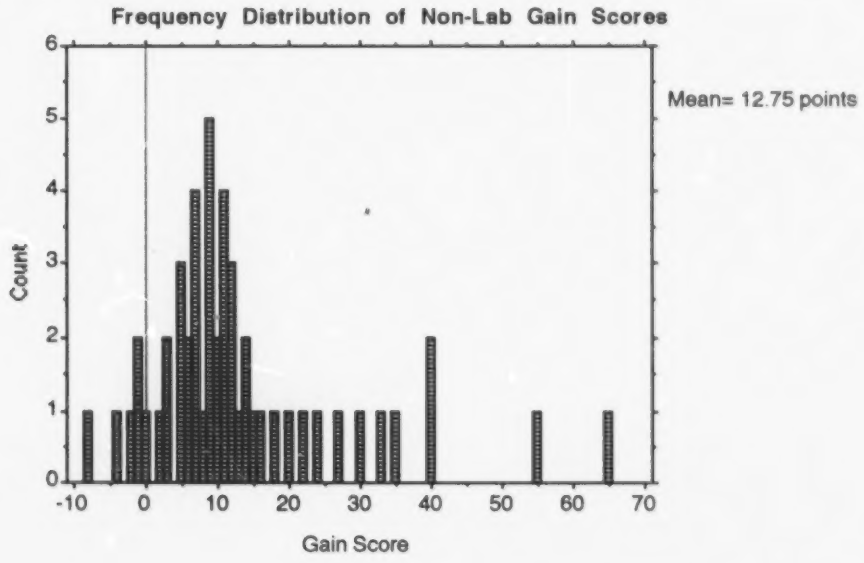
Group:	Count:	Mean:	Std. Dev.:	Std. Error:
Lab	51	20.49	12.45	1.743
Non-Lab	52	12.75	14.662	2.033

Descriptions and Distributions of Gain Scores

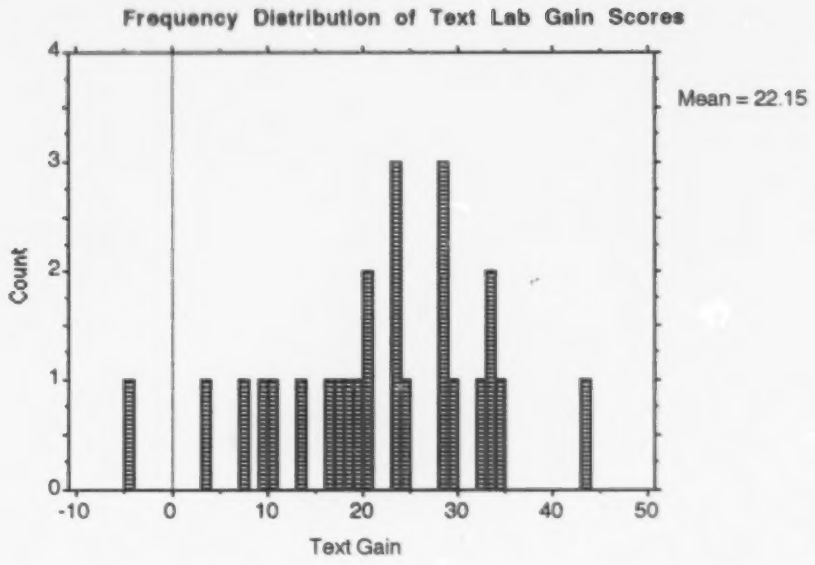
Practice Lab Gain Scores (Text- and Computer-Based Practice Groups)



Non-Lab Gain Scores



Text-Based Practice Gain Scores



Computer-Based Practice Gain Scores